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EXAMINER	
PHILPOTT, JUSTIN M	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/763,913	VADGAMA, SUNIL KESHAVJI	
	Examiner	Art Unit	
	Justin M. Philpott	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9-12,20-22,25,28 and 32-37* is/are rejected.

7)☒ Claim(s) *7,8,13-19,23,24,26,27 and 29-31* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20010223*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed February 14, 2006 have been fully considered but they are not persuasive.

Specifically, applicant argues (at pages 14-16) that Ariyoshi cannot anticipate applicant's claims because functional aspects of the invention of Ariyoshi may differ from that of applicant's invention. In particular, applicant argues that information "relat[ing] to phase control of spreading codes" (page 15, line 11) and/or "spreading code synchronization timing information" (page 15, line 8) discussed by Ariyoshi does not anticipate applicant's claim language of "code information identifying a further spreading code". However, this argument is not persuasive for the following reason.

Applicant admits that the information in Ariyoshi (e.g., PJ-i, PC-i, SC-i, and CT) comprises "information" which relates to "spreading codes" (at page 15, lines 4-13). Accordingly, Examiner understands applicant's argument to be the following: 1) the information relates to, but does not have a function of *identifying*, the spreading codes, and/or 2) the information does not refer to a *further* spreading code. With respect to the first issue, it remains the Examiner's position that information characteristics of a spreading code which include the phases (Ariyoshi at col. 6, line 62), phase differences (Ariyoshi at col. 9, line 1) and particularly spreading code synchronization timing information (Ariyoshi at col. 8, lines 24-25) are in fact *identifying* information of a spreading code. In particular, "spreading code synchronization timing information" inherently corresponds to a "spreading code" and inherently must identify

the corresponding "spreading code" for that information to be useful. Accordingly, the above-mentioned information in Ariyoshi is *identifying* information as broadly recited in applicant's claims. With respect to the second issue, the above-mentioned information in Ariyoshi corresponds to a *further* spreading code of an interfering signal because Ariyoshi specifically discloses that such information is determined as a result of, and to prevent, interference from other terminal stations (e.g., see Ariyoshi at col. 7, lines 51-60; see also col. 3, lines 7-18 regarding "to synchronize the phases of orthogonal codes of respective terminal stations" by measuring "the phase of a reception signal of each terminal station"). Accordingly, applicant's argument is not persuasive.

Additionally, applicant argues more specifically (at page 16) that Ariyoshi is a timing-based solution for increasing network capacity, whereas applicant's invention also solves the same problem but applicant's invention is "based on giving each mobile station knowledge of the spreading codes of *significant interfering users* (for example *high bit rate users* HBIUs) so that the mobile station can take steps to cancel out the interference caused by such users" (emphasis added) (page 16, lines 12-14). In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., an invention "based on giving each mobile station knowledge of the spreading codes of significant interfering users [,] for example high bit rate users HBIUs[,] so that the mobile station can take steps to cancel out the interference caused by such users") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). That is, while applicant's invention may arguably differ from

the teachings of Ariyoshi, applicant's claims currently do not reflect a distinguishing difference between applicant's invention and Ariyoshi. If applicant's invention does in fact differ from Ariyoshi in the way described above by applicant, applicant is invited to amend the claims accordingly to reflect a difference between the teachings of Ariyoshi and applicant's invention.

Finally, if applicant considers amending the claims to distinguish applicant's invention over Ariyoshi, or alternatively, if applicant is not persuaded that Ariyoshi anticipates applicant's broadly recited claim limitations, applicant should also be mindful of the previously cited art of Bruckert (USP 5,894,500). Specifically, Bruckert teaches a device that receives from a base station "information regarding remote units" that includes "the carrier phase, PN spreading code, and data for remote units that are potential interferers" (Bruckert at col. 4, lines 27-31) and the device includes a noise cancellation unit to reduce the interference effect (e.g., see Bruckert at col. 3, line 50 – col. 6, line 61). Thus, while not relied upon in rejecting applicant's claims, in addition to Ariyoshi, Bruckert also teaches the above-argued aspect of applicant's claimed invention.

Claim Objections

2. Claims 1, 2 and 20 are objected to because of the following informalities:

In claim 1, applicant has improperly removed the word "a" from "a wanted signal processing portion" at line 3 without indicating its removal and has improperly removed the word "processes" from "processing portion which processes an input signal" at line 3; accordingly, "wanted signal processing portion" should be changed back to its original language

of "a wanted signal processing portion", and "processing portion which an input signal" should be changed back to its original language of "processing portion which processes an input signal".

In claim 2, a random period has been improperly inserted at line 3 as "plurality of items of. code"; this period should be removed.

In claim 20, the previously recited "A base station" at line 1 has improperly been changed by applicant to "Abase station"; this should changed back to its original language of "A base station".

While all of the above four un-marked amendments by applicant appear to be honest typographical mistakes, applicant is reminded that any claim amendments should be marked clearly as amendments (e.g., by strikethrough or underlines, and with the identifier "(currently amended)"). Also, while Examiner has reviewed claims 1-37 for similar errors, applicant is respectfully requested to review each claim to ensure no additional errors or unmarked amendments are present. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-6, 20, 25, 28 and 32-37 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,137,786 to Ariyoshi et al.

Regarding claim 1, Ariyoshi teaches a mobile station (e.g., terminal station 402, see FIG. 10, col. 6, line 32 – col. 8, line 6, and col. 10, line 21 – col. 11, line 29), for use in a CDMA communications network (e.g., see col. 2, line 34-50), comprising: a wanted signal processing portion (e.g., comprising radio frequency circuit 303) which processes an input signal (e.g., signal received at antenna 201), representing a CDMA transmission signal received at the mobile station from a base station of the network (e.g., see col. 6, lines 32-48), to derive therefrom a wanted signal embodying a preselected spreading code (e.g., transmitted data comprising spreading code Wi, see FIG. 1); a code information receiving portion (e.g., comprising acquisition circuit 314 and DLL circuit 310) which receives from the base station code information (e.g., comprising PJ-i and PC-i, acquisition searching control information SC-i, spreading code synchronization timing signal CT, see col. 6, line 32 – col. 10, line 65) identifying a further spreading code assigned by the network to an interfering signal of another network user; and an interfering signal processing portion (e.g., frame decomposition 308 which outputs received data 309, see FIG. 9) which employs the further spreading code identified by the received code information to reduce the interference effect of that interfering signal on the derived wanted signal (e.g., see col. 3, line 32 – col. 8, line 6 and col. 10, lines 21-65).

Regarding claim 2, Ariyoshi teaches the code information receiving portion (e.g., comprising acquisition circuit 314 and DLL circuit 310) is operable to receive from the base station (e.g., base station 401) a plurality of items of code information corresponding respectively to a plurality of such interfering signals (e.g., each of code information PJ-i, PC-i, and SC-i correspond to code information of one of a plurality of respective i modems, wherein i is 1 through n, see col. 6, line 32 – col. 10, line 65), each such item identifying a spreading code

assigned by the network to its corresponding interfering signal (e.g., see col. 10, lines 22-65 regarding orthogonal code Wi corresponding to SC-i, where i=1 to n); and the interfering signal processing portion (e.g., frame decomposition 308 which outputs received data 309, see FIG. 9) is operable to employ the spreading codes (e.g., Wi) identified by the received items to reduce the interference effect on the derived wanted signal of each of the plurality of interfering signals (e.g., see col. 3, line 32 – col. 8, line 6 and col. 10, lines 21-65).

Regarding claim 3, Ariyoshi teaches the input signal (e.g., signal received at antenna 201) of the wanted signal processing portion (e.g., comprising radio frequency circuit 303) is preprocessed by the interfering signal processing portion (e.g., frame decomposition 308 which outputs received data 309, see FIG. 9) to reduce or cancel components in the input signal associated with each interfering signal (e.g., see col. 3, line 32 – col. 8, line 6 and col. 10, lines 21-65).

Regarding claim 4, Ariyoshi teaches the interfering signal processing portion (e.g., frame decomposition 308 which outputs received data 309, see FIG. 9) is operable to derive, for each interfering signal, a corresponding interference cancellation signal (e.g., comprising SC-i) representative of a component in the input signal associated with that interfering signal (e.g., see col. 10, lines 21-65).

Regarding claim 5, Ariyoshi teaches the interfering signal processing portion (e.g., frame decomposition 308 which outputs received data 309, see FIG. 9) is operable to subtract each interference cancellation signal from a signal representing the received CDMA transmission signal to produce the input signal of the wanted signal processing portion (e.g., see FIG. 9 and output RX data 309).

Regarding claim 6, Ariyoshi teaches the interfering signal processing portion (e.g., frame decomposition 308 which outputs received data 309, see FIG. 9) is operable to derive each corresponding interference cancellation signal (e.g., comprising SC-i) from a signal representing the received CDMA transmission signal (e.g., see col. 8, line 18 – col. 10, line 65).

Regarding claim 20, Ariyoshi teaches a base station (e.g., base station 401, see FIGS. 1 and 2, col. 4, line 3 – col. 6, line 31, and col. 8, line 7 – col. 10, line 20), for use in a CDMA communications network (e.g., see col. 2, line 34-50), comprising: an interfering signal designating portion (e.g., comprising Tx-PN generator 104 producing PNf, see FIGS. 1 and 2) which designates at least one of a plurality of downlink signals transmitted by the base station as being an interfering signal (e.g., PNf noise patterns, see col. 6, lines 46-48 regarding the noise patterns being transmitted on the forward link by the base station) having an interference effect on a wanted signal (e.g., transmitting data 101) of a subject mobile station of the network (e.g., mobile stations respectively corresponding to base station modems 106-1 to 106-n); and a code information transmission portion (e.g., phase state decision circuit 223, see FIG. 5) which includes, in a predetermined control signal (e.g., comprising PJ-i and PC-i, acquisition searching control information SC-i, spreading code synchronization timing signal CT, see col. 8, line 46 – col. 10, line 54), and transmitted by the base station to the subject mobile station (e.g., see, in particular, col. 8, line 66 – col. 9, line 4 and col. 10, lines 15-20 regarding transmission to terminal station), code information (e.g., comprising spreading code synchronization timing signal CT), identifying a spreading code assigned by the network to the designated interfering signal (e.g., see col. 7, line 50 – col. 9, line 11), for use by the subject mobile station to reduce the interference effect of the interfering signal on the wanted signal (e.g., see col. 9, lines 55-65).

Regarding claim 25, Ariyoshi teaches a base station (e.g., base station 401) further comprising a beamformer (e.g., Tx RF 108, see FIGS. 1, 4 and 7) which forms respective beams for directing its CDMA transmission signals towards its respective users (e.g., see col. 4, line 3-65; col. 8, lines 7-30; and col. 9, lines 20-36).

Regarding claim 28, Ariyoshi teaches a base station (e.g., base station 401) further comprising a beamformer (e.g., Tx RF 108, see FIGS. 1, 4 and 7) which forms respective beams for directing its CDMA transmission signals towards its respective users (e.g., see col. 4, line 3-65; col. 8, lines 7-30; and col. 9, lines 20-36); an interference judgment information transmission portion (e.g., comprising 204 which incorporates PNf; 203 which incorporates Wi; and 201 whch incorporates PJ-i and PC-i) which includes, in a predetermined control signal (e.g., see col. 8, line 56 – col. 9, line 11 and col. 10, lines 9-21) transmitted by the base station (e.g., base station 401) to the subject mobile station (e.g., terminal station 402), interference judgment information (e.g., comprising PNf, Wi, PJ-i, PC-i) providing, for each of a plurality of users operating in the area of the base station (e.g., base station 401), information relevant to assessing an interference effect on the wanted signal of the downlink signal of the user concerned (e.g., see col. 10, lines 9-65).

Regarding claim 32, Ariyoshi teaches a CDMA communications network (e.g., see col. 2, line 34-50) comprising the mobile station (e.g., terminal station 402) and base station (e.g., base station 401) as discussed above regarding claims 1 and 20, respectively. That is, Ariyoshi teaches a base station (e.g., base station 401, see FIGS. 1 and 2, col. 4, line 3 – col. 6, line 31, and col. 8, line 7 – col. 10, line 20) operable to designate (e.g., via Tx-PN generator 104 producing PNf, see FIGS. 1 and 2) at least one of a plurality of downlink signals transmitted

thereby as being an interfering signal (e.g., PNf noise patterns, see col. 6, lines 46-48 regarding the noise patterns being transmitted on the forward link by the base station) having an interference effect on a wanted signal (e.g., transmitting data 101) of the mobile station (e.g., mobile stations respectively corresponding to base station modems 106-1 to 106-n), and also operable to include, in a predetermined control signal (e.g., comprising PJ-i and PC-i, acquisition searching control information SC-i, spreading code synchronization timing signal CT, see col. 8, line 46 – col. 10, line 54) transmitted thereby to the mobile station (e.g., see, in particular, col. 8, line 66 – col. 9, line 4 and col. 10, lines 15-20 regarding transmission to terminal station), code information (e.g., comprising spreading code synchronization timing signal CT) identifying a spreading code assigned by the network to the designated interfering signal (e.g., see col. 7, line 50 – col. 9, line 11); the mobile station being (e.g., terminal station 402) operable to receive the predetermined control signal (e.g., via radio frequency circuit 303) and to employ the spreading code identified by the code information included in that signal (e.g., via acquisition circuit 314 and DLL circuit 310) to reduce the interference effect of that interfering signal on the wanted signal (e.g., see col. 6, line 32 – col. 10, line 65, particularly, col. 9, lines 55-65).

Regarding claim 33, Ariyoshi teaches a receiving method for use in a mobile station (e.g., terminal station 402) of a CDMA communications network (e.g., see col. 2, line 34-50) as discussed above regarding claim 1. That is, Ariyoshi teaches receiving a CDMA transmission signal from a base station (e.g., base station 401, see col. 2, line 34-50) of the network; processing (e.g., via radio frequency circuit 303) an input signal (e.g., signal received at antenna 201) representing the received CDMA transmission signal to derive therefrom a wanted signal embodying a preselected spreading code (e.g., transmitted data comprising spreading code Wi,

see FIG. 1); receiving (e.g., via acquisition circuit 314 and DLL circuit 310) from the base station (e.g., base station 401) code information (e.g., comprising PJ-i and PC-i, acquisition searching control information SC-i, spreading code synchronization timing signal CT, see col. 6, line 32 – col. 10, line 65) identifying a further spreading code assigned by the network to an interfering signal of another network user; and employing (e.g., via decomposition 308 which outputs received data 309, see FIG. 9) the further spreading code identified by the received code information to reduce the interference effect of that interfering signal on the derived wanted signal (e.g., see col. 3, line 32 – col. 8, line 6 and col. 10, lines 21-65).

Regarding claim 34, Ariyoshi teaches a transmission method for use in a base station (e.g., base station 401) of a CDMA communications network (e.g., see col. 2, line 34-50) as discussed above regarding claim 20. That is, Ariyoshi teaches designating (e.g., via Tx-PN generator 104 producing PNf, see FIGS. 1 and 2) at least one of a plurality of downlink signals transmitted by the base station as being an interfering signal (e.g., PNf noise patterns, see col. 6, lines 46-48 regarding the noise patterns being transmitted on the forward link by the base station) having an interference effect on a wanted signal (e.g., transmitting data 101) of a subject mobile station of the network (e.g., mobile stations respectively corresponding to base station modems 106-1 to 106-n); and including, in a predetermined control signal (e.g., comprising PJ-i and PC-i, acquisition searching control information SC-i, spreading code synchronization timing signal CT, see col. 8, line 46 – col. 10, line 54) transmitted by the base station to the subject mobile station (e.g., see, in particular, col. 8, line 66 – col. 9, line 4 and col. 10, lines 15-20 regarding transmission to terminal station), code information (e.g., comprising spreading code synchronization timing signal CT), identifying a spreading code assigned by the network to the

designated interfering signal (e.g., see col. 7, line 50 – col. 9, line 11), for use by the subject mobile station to reduce the interference effect of the interfering signal on the wanted signal (e.g., see col. 9, lines 55-65).

Regarding claim 35, Ariyoshi teaches a CDMA communications method (e.g., see col. 2, line 34-50) in the CDMA network as discussed above regarding claim 32. That is, Ariyoshi teaches designating (e.g., via Tx-PN generator 104 producing PNf, see FIGS. 1 and 2) at least one of a plurality of downlink signals transmitted by a base station (e.g., base station 401, see FIGS. 1 and 2, col. 4, line 3 – col. 6, line 31, and col. 8, line 7 – col. 10, line 20) of the network as being an interfering signal (e.g., PNf noise patterns, see col. 6, lines 46-48 regarding the noise patterns being transmitted on the forward link by the base station) having an interference effect on a wanted signal (e.g., transmitting data 101) of a subject mobile station (e.g., mobile stations respectively corresponding to base station modems 106-1 to 106-n) of the network; including, in a predetermined control signal (e.g., comprising PJ-i and PC-i, acquisition searching control information SC-i, spreading code synchronization timing signal CT, see col. 8, line 46 – col. 10, line 54) transmitted by the base station to the subject mobile station (e.g., see, in particular, col. 8, line 66 – col. 9, line 4 and col. 10, lines 15-20 regarding transmission to terminal station), code information (e.g., comprising spreading code synchronization timing signal CT) identifying a spreading code assigned by the network to the designated interfering signal (e.g., see col. 7, line 50 – col. 9, line 11); receiving the predetermined control signal (e.g., via radio frequency circuit 303) at the mobile station and employing the spreading code identified by the code information included in that signal (e.g., via acquisition circuit 314 and DLL circuit 310) to reduce the

interference effect on the wanted signal of that interfering signal (e.g., see col. 6, line 32 – col. 10, line 65, particularly, col. 9, lines 55-65).

Regarding claim 36, Ariyoshi teaches a mobile station for use in a CDMA communications network as discussed above regarding claim 1. That is, Ariyoshi teaches a mobile station (e.g., terminal station 402, see FIG. 10, col. 6, line 32 – col. 8, line 6, and col. 10, line 21 – col. 11, line 29), for use in a CDMA communications network (e.g., see col. 2, line 34-50), comprising: wanted signal processing means for processing (e.g., comprising radio frequency circuit 303) an input signal (e.g., signal received at antenna 201), representing a CDMA transmission signal received at the mobile station from a base station of the network (e.g., see col. 6, lines 32-48), to derive therefrom a wanted signal embodying a preselected spreading code (e.g., transmitted data comprising spreading code Wi, see FIG. 1); a code information receiving means (e.g., comprising acquisition circuit 314 and DLL circuit 310) for receiving from the base station code information (e.g., comprising PJ-i and PC-i, acquisition searching control information SC-i, spreading code synchronization timing signal CT, see col. 6, line 32 – col. 10, line 65) identifying a further spreading code assigned by the network to an interfering signal of another network user; and interfering signal processing means (e.g., frame decomposition 308 which outputs received data 309, see FIG. 9) for employing the further spreading code identified by the received code information to reduce the interference effect of that interfering signal on the derived wanted signal (e.g., see col. 3, line 32 – col. 8, line 6 and col. 10, lines 21-65).

Regarding claim 37, Ariyoshi teaches a base station for use in a CDMA communications network as discussed above regarding claim 20. That is, Ariyoshi teaches a base station (e.g.,

base station 401, see FIGS. 1 and 2, col. 4, line 3 – col. 6, line 31, and col. 8, line 7 – col. 10, line 20), for use in a CDMA communications network (e.g., see col. 2, line 34-50), comprising: an interfering signal designating means (e.g., comprising Tx-PN generator 104 producing PNf, see FIGS. 1 and 2) for designating at least one of a plurality of downlink signals transmitted by the base station as being an interfering signal (e.g., PNf noise patterns, see col. 6, lines 46-48 regarding the noise patterns being transmitted on the forward link by the base station) having an interference effect on a wanted signal (e.g., transmitting data 101) of a subject mobile station of the network (e.g., mobile stations respectively corresponding to base station modems 106-1 to 106-n); and code information transmission means (e.g., phase state decision circuit 223, see FIG. 5) for including, in a predetermined control signal (e.g., comprising PJ-i and PC-i, acquisition searching control information SC-i, spreading code synchronization timing signal CT, see col. 8, line 46 – col. 10, line 54) transmitted by the base station to the subject mobile station (e.g., see, in particular, col. 8, line 66 – col. 9, line 4 and col. 10, lines 15-20 regarding transmission to terminal station), code information (e.g., comprising spreading code synchronization timing signal CT), identifying a spreading code assigned by the network to the designated interfering signal (e.g., see col. 7, line 50 – col. 9, line 11), for use by the subject mobile station to reduce the interference effect of the interfering signal on the wanted signal (e.g., see col. 9, lines 55-65).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 11, 12, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ariyoshi.

Regarding claims 11, 12, 21 and 22, Ariyoshi teaches the mobile station and base station discussed above regarding claims 1 and 20, respectively. Further, Ariyoshi teaches the code information receiving portion (e.g., comprising acquisition circuit 314 and DLL circuit 310) receives code information transmitted by the base station to all mobile stations in its area (e.g., see col. 8, line 7 – col. 10, line 65).

However, Ariyoshi may not specifically disclose that the transmissions to the mobile stations is on a common broadcasted control channel (e.g., as recited in claims 11 and 21) or, instead, is on an individual control channel (e.g., as recited in claims 12 and 22) to each mobile station. However, Ariyoshi clearly teaches transmitting the control information to each of the mobile stations (e.g., see col. 8, line 7 – col. 10, line 65). Further, Examiner takes official notice that it is well known in the art to transmit mobile-destined control information over either a broadcasted or individual control channel. Further, Ariyoshi *requires* either one or the other type of transmission (i.e., broadcast or individual transmission) (e.g., see col. 8, line 7 – col. 10, line 65). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to implement either a broadcast or individual control channels for transmitting the control information to the mobile stations in Ariyoshi since such transmissions are well known in the art and since the invention of Ariyoshi requires on or the other type of well known techniques.

7. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ariyoshi in view of U.S. Patent No. 5,151,919 to Dent.

Regarding claim 9, Ariyoshi teaches the mobile station as discussed above regarding claim 1, however, may not specifically disclose utilizing a RAKE receiver.

Dent also teaches CDMA communication techniques, and further, also teaches extracting a desired signal from a composite signal comprising interference (e.g., see col. 6, lines 17-57). Additionally, Dent teaches receiving portions at the mobile station comprise RAKE receivers having a plurality of fingers for processing different respective paths of a received CDMA transmission signal (e.g., see col. 14, line 66 – col. 15, line 27 regarding RAKE receivers). Further, the teachings of Dent provide removal of interfering signals in a CDMA transmission signal with greater accuracy (e.g., see col. 2, line 55 – col. 3, line 18). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CDMA mobile station teachings of Dent to the CDMA mobile station of Ariyoshi in order to provide greater accuracy of interference removal.

Regarding claim 10, Dent teaches receiving portions at the mobile station comprise the RAKE receiver (e.g., see col. 14, line 66 – col. 15, line 27), and the mobile station further comprises: a path searcher connected for supplying the same path information thereto (e.g., see col. 14, line 66 – col. 15, line 27 regarding identifying the path), coupled to a path information delay element for delaying supply of the path information to signal processing portion for a preselected delay time after the same path information is supplied to an interfering signal processing portion (e.g., see col. 14, line 66 – col. 16, line 17 regarding delaying samples by one and two bit periods). As discussed above, the teachings of Dent provide removal of interfering

signals in a CDMA transmission signal with greater accuracy (e.g., see col. 2, line 55 – col. 3, line 18). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the CDMA mobile station teachings of Dent to the CDMA mobile station of Ariyoshi in order to provide greater accuracy of interference removal.

Allowable Subject Matter

8. Claims 7, 8, 13-19, 23, 24, 26, 27 and 29-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

claim 7 recites an interfering signal processing portion has, for each interfering signal, a corresponding processing unit for deriving the interference cancellation signal corresponding to that interfering signal, which processing unit comprises: a code generator which generates the identified spreading code assigned to the interfering signal; a despreader connected for receiving a first signal representing the received CDMA transmission signal and also connected to the code generator for receiving the generated spreading code, and operable to despread the first signal to produce a second signal representing the interfering signal; and a respreader connected to the despreader for receiving therefrom the second signal and also connected to the code generator for receiving the generated spreading code, and operable to respread the second signal to produce the corresponding interference cancellation signal; which was not found in a search of related prior art;

claim 8 recites an interfering signal processing which further comprises: a signal delay element connected for receiving a basic signal representing the received CDMA transmission signal and operable to delay the basic signal by a preselected delay time to produce a delayed version thereof, the input signal of each processing unit being provided directly by, or being derived from, the basic signal; and a subtractor, connected for receiving the delayed version of the basic signal and each interference cancellation signal, and operable to produce the input signal of the wanted signal processing portion in dependence upon the difference between the delayed version and each interference cancellation signal; which was not found in a search of related prior art;

claim 13 recites a base station as in claim 1 but which is further operable to form respective beams for directing its CDMA transmission signals towards their respective users and is also operable to transmit to the mobile station interference judgment information providing, for each of a plurality of users operating in its area, information relevant to assessing an interference effect on the wanted signal of the mobile station of an interfering signal of the user concerned; the mobile station comprising: an interfering signal assessment portion which assesses the interference effect of the interfering signal of each user of the plurality based on the received interference judgment information; and an interfering signal selection portion which selects one or more of the interfering signals amongst the respective interfering signals of the users of plurality of users based on the results of the assessment; which was not found in a search of related prior art;

claims 14-19 depend upon claim 13 and thus, comprise allowable subject matter for the same reasons as discussed above regarding claim 13;

claim 23 recites a base station as in claim 20 but which further comprises an interfering signal assessment portion which assesses for each of a plurality of users in the area of the base station the interference effect on the wanted signal of the mobile station of the downlink signal of the user connected, the interfering signal designating portion being operable to determine which downlink signals of the plurality of users are to be designated as interfering signals based on the results of the assessment; which was not found in a search of related prior art;

claim 24, 26 and 27 depend upon claim 23 and thus, comprises allowable subject matter for the same reasons as discussed above regarding claim 23;

claim 29 recites a base station as in claim 28 wherein the interference judgment information for a user of the plurality of users includes position information of that user; which was not found in a search of related prior art;

claim 30 recites a base station as in claim 28 wherein the interference judgment information for a user of the plurality of users includes angular information of the user relative to the base station; which was not found in a search of related prior art; and

claim 31 recites a base station as in claim 28 wherein the interference judgment information for a user of the plurality of users includes downlink transmission power level information of that user; which was not found in a search of related prior art.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin M. Philpott whose telephone number is 571.272.3162. The examiner can normally be reached on M-F, 9:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571.272.3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Justin M Philpott

CHI PHAM
SUPERVISORY PATENT EXAM

4/26/06